ATTACHMENT I

PERRY NUCLEAR POWER PLANT

ACTION PLAN TO

ADDRESS

ADDITIONAL CONTAINMENT ISSUES

(Humphrey Concerns)

September 8, 1982

8209200388

Action Plan 1 - Generic

I. Issues Addressed

1.1 Presence of local encroachments such as the TIP platform, the drywell personnel airlock and the equipment and floor drain sumps may increase the pool swell velocity by as much as 20 percent.

1.2 Local encroachments in the pool may cause the bubble breakthrough height to be higher than expected.

1.4 Piping impact loads may be revised as a result of the higher pool swell velocity.

II. Program for Resolution

1.GE Provide details of the one-dimensional analysis which was completed and showed a 20% increase in pool velocity.

2.GE The two-dimensional model will be refined by addition of a bubble pressure model and used to show that pool swell velocity decreases near local encroachments. The code is a version of SOLA.

3.GE The inherent conservatisms in the code and modeling assumptions will be listed.

4.GE The modified code will be benchmarked against existing clean pool PSTF data.

5.GE A recognized authority on hydrodynamic phenomena will be retained to provide guidance on conduct of the analyses.

6a.GE An evaluation will be made with drawings of various plant encroachments and pool geometries to establish that the results of the Grand Gulf Analysis are representative or bounding.

6.GE The effects of the presence of local encroachments on pool swell will be calculated with the two-dimensional code. Three-dimensional effects (such as bubble break through in non-encroached pool regions) will be included based upon empirical data.

III. Schedule

Items 1-3 are complete. Results were submitted in a letter from L. F. Dale, MP&L, to H. R. Denton, NRC, reference #AECM-82/353, dated August 19, 1982. These results apply to Perry.

Items 4-6 will be completed October 1, 1982.

Action Plan 2 - Generic/Plant Specific

I. Issues Addressed

1.3 Additional submerged structure loads may be applied to submerged structures near local encroachments.

II. Program for Resolution

1.GE The results obtained from the two-dimensional analyses completed as part of the activities for Action Plan 1 will be used to define changes in fluid velocities in the suppression pool which are created by local encroachments. Supporting arguments to verify that the results from two-dimensional analyses will be bounding with respect to velocity changes in the suppression pool will be provided.

2.GAI The new pool velocity profiles will be used to calculate revised submerged structure loads using the existing or modified submerged structure load definition models.

3.GAI The newly defined submerged structure loads will be compared to the loads which were used as a design basis for equipment and structures in the Perry Nuclear Power Plant supppression pool.

III. Schedule

Items 1-3 will be completed by November 26, 1982.

Action Plan 3 - Plant Specific

I. Issues Addressed

1.5 Impact loads on the HCU floor may be imparted and the HCU modules may fail which could prevent successful scram if the bubble breakthrough height is raised appreciably by local encroachments.

II. Program for Resolution

1.GAI The analytical results obtained from the activities completed under Action Plan 1 will be evaluated.

III. Schedule

Item 1 will be completed by October 30, 1982.

Action Plan 4 - Generic/Plant Specific

I. Issues Addressed

1.6 Local encroachments or the steam tunnel may cause the pool swell froth to move horizontally and apply lateral loads to the gratings around the HCU floor.

II. Program for Resolution

1a.GE An assessment will be made of the potential effects which variations in HCU floor support arrangement and grating location may produce. This assessment will result in the selection of a bounding arrangement for defining lateral loads.

1.GE A bounding analysis for determining the horizontal liquid and air flows created by the presence of the steam tunnel and HCU floor will be performed. The forces imposed on the HCU floor supports and grating will be calculated from this information.

2.GAI It will be demonstrated that the affected structures can withstand the calculated loads.

III. Schedule

Items 1 & 2 will be completed by November 1, 1982.

Action Plan 5 - Generic/Plant Specific

I. Issues Addressed

2.1 The annular regions between the safety relief valve lines and the drywell wall penetration sleeves may produce condensation oscillation (C.O.) frequencies near the drywell and containment wall structural resonance frequencies.

2.2 The potential condensation oscillation and chugging loads produced through the annular area between the SRVDL and sleeve may apply unaccounted for loads to the SRVDL. Since the SRVDL is unsupported from the quencher to the inside of the drywell wall, this may result in failure of the line.

2.3 The potential condensation oscillation and chugging loads produced through the annular area between the SRVDL and sleeve may apply unaccounted for loads to the penetration sleeve. The loads may also be at or near the natural frequency of the sleeve.

II. Program for Resolution

1.GE The existing condensation data will be reviewed to verify that no significant frequency shifts occurred. The data will also be reviewed to confirm that the amplitudes were not closely related to acoustic effects.

2.GE The driving conditions for condensation oscillation at the SRVDL exit will be calculated. Based on these calculations, existing test data will be used to estimate the frequency and bounding pressure amplitude of condensation oscillation at the SRVDL annulus exit.

3.GAI A wide difference between the C.O. frequency and structural resonances will be demonstrated. The margin between the new loads and existing loads will be quantified.

4.GAI Provide a detailed description of all hydrodynamic and thermal loads that are imposed on the SRVDL and the SRVDL sleeve during LOCA blowdowns.

5.GAI Assure that thermal loads created by steam flow through the annulus have been accounted for in the design.

6.GAI State the external pressure loads which the portion of the SRVDL enclosed by the sleeve can withstand.

Action Plan 5 - Generic/Plant Specific (Continued)

III. Schedule

Items 1-7 will be completed December 17, 1982.

Action Plan 6 - Plant Specific

I. Issues Addressed

3.1 The design of the STRIDE plant did not consider vent clearing, condensation oscillation and chugging loads which might be produced by the actuation of the RHR heat exchanger relief valves.

3.3 Discharge from the RHR relief valves may produce bubble discharge or other submerged structure loads on equipment in the suppression pool.

3.7 The concerns related to the RHR heat exchanger relief valve discharge lines should also be addressed for all relief lines that exhaust into the pool.

II. Program for Resolution

1.GAI The vent clearing loads associated with actuation of the RHR relief valves will be calculated. The water jet loads will also be calculated. The dynamic loads associated with relief valve operation will be recalculated to evaluate relief valve discharge line design.

The following information will be submitted for all relief valves which discharge to the suppression pool.

2.GAI Isometric drawings and P&IDs showing line and vacuum breaker location will be provided. This information will include the following: The geometry (diameter, routing, height above the suppression pool, etc.) of the pipe line from immediately downstream of the relief valve up to the line exit. The maximum and minimum expected submergence of the discharge line exit below the pool surface will be included. Also, any lines equipped with load mitigating devices (e.g., spargers, quenchers) will be noted.

3.GAI The range of flow rates and character of fluid (i.e., air, water, steam) which is discharged through the line and the plant conditions (e.g., pool temperatures) when discharges occur will be defined.

4.GAI The sizing and performance characteristics (including make, model, size, opening characteristics and flow characteristics) of any vacuum breakers provided for relief valve discharge lines will be noted.

5.GAI The potential for oscillatory operation of the relief valves in any given discharge line will be discussed.

6.GAI The potential for failure of any relief valve to reseat following initial or subsequent opening will be evaluated.

Action Plan 6 - Plant Specific (Continued)

7.GAI The location of all components and piping in the vicinity of the discharge line exit and the design bases will be provided.

III. Schedule

Items 1-7 will be completed by December 17, 1982.

Action Plan 7 - Generic

I. Issues Addressed

3.2 The STRIDE design provided only nine inches of submergence above the RHR heat exchanger relief valve discharge line at low suppression pool levels.

II. Program for Resolution

1.GE The Humboldt Bay pressure suppression test data demonstrated for relationship of discharge submergence on condensation effectiveness. An evaluation based on this data will be submitted which shows that the maximum discharge from the relief valves can be quenched under all possible submergence conditions.

III. Schedule

Item 1 is complete. Results were submitted in a letter from L. F. Dale, MP&L, to H. R. Denton, NRC, reference #AECM-82/353, dated August 19, 1982. These results apply to Perry.

Action Plan 8 - Plant Specific

I. Issues Addressed

3.4 The RHR heat exchanger relief valve discharge lines are provided with vacuum breakers to prevent negative pressure in the lines when discharging steam is condensed in the pool. If the valves experience repeated actuation, the vacuum breaker sizing may not be adequate to prevent drawing slugs of water back through the discharge piping. These slugs of water may apply impact loads to the relief valve or be discharged back into the pool at the next relief valve actuation and apply impact loads to submerged structures.

3.5 The RHR relief valves must be capable of correctly functioning following an upper pool dump which may increase the suppression pool level as much as five feet creating higher back pressures on the relief valves.

II. Program for Resolution

1.GAI A failure mode analysis on the pressure controller to establish all possible failure modes will be performed.

2.GAI The system design will be reviewed to determine if subsequent valve operation is feasible.

3.GAI Based on the results of Item 2, the appropriate loads will be determined. This will be the water jet and air bubble load created by a first actuation of the relief valve and either a second "pop" load based on subsequent actuation or condensation oscillation loads based on continuous venting.

4.GAI The vacuum breaker performance will be quantified as applicable. This will include a calculation showing the maximum elevation to which water can be drawn in the RHR relief valve discharge line.

5.GAI Analyses demonstrating that the heat exchangers are capable of withstanding an overpressure transient will be completed. RHR relief valves will be demonstrated to be capable of functioning following an upper pool dump.

III. Schedule

Items 1-5 will be completed December 17, 1982.

Action Plan 9 - Generic

I. Issues Addressed

3.6 If the RHR heat exchanger relief valves discharge steam to the upper levels of the suppression pool following a design basis accident, they will significantly aggravate suppression pool temperature stratification.

II. Program for Resolution

1a.GE A bounding quantity of energy which could be added to the suppression pool due to actuation of the RHR heat exchanger relief valves will be identified. This definition will be based upon the maximum energy addition rates due to failures in the individual plant RHR pressure controllers.

1.GE An evaluation of all scenarios which could lead to discharge from the RHR heat exchanger relief valves will be made.

2.GE The discharge plume from the relief valves will be investigated. This plume will establish the maximum area of the pool which can be affected.

III. Schedule

Items 1-2 will be completed by November 1, 1982.

Action Plan 10 - Generic

I. Issues Addressed

4.1 The present containment response analyses for drywell break accidents assume that the ECCS systems transfer a significant quantity of water from the suppression pool to the lower regions of the drywell through the break. This results in a pool in the drywell which is essentially isolated from the suppression pool at a temperature of approximately 135 degrees F. The containment response analysis assumes that the drywell pool is thoroughly mixed with the suppression pool. If the inventory in the drywell is assumed to be isolated and the remainder of the heat is discharged to the suppression pool, an increase in bulk pool temperature of 10 degrees F may occur.

II. Program for Resolution

1.GE Details of the analysis which predicted a maximum temperature increase of 6 degrees F will be provided.

III. Schedule

Item 1 will be completed by October 1, 1982.

Action Plan 11 - Generic

I. Issues Addressed

4.2 The existence of the drywell pool is predicated upon continuous operation of the ECCS. The current emergency procedure guidelines require the operators to throttle ECCS operation to maintain vessel level below level 8. Consequently, the drywell pool may never be formed.

9.1 The current FSAR analysis is based upon continuous injection of relatively cool ECCS water into the drywell through a broken pipe following a design basis accident. The EPG's direct the operator to throttle ECCS operation to maintain reactor vessel level at about level 8. Thus, instead of releasing relatively cool ECCS water, the break will be releasing saturated steam which might produce higher containment pressurizations than currently anticipated. Therefore, the drywell air which would have been drawn back into the drywell will remain in the containment and higher pressures will result in both the containment and the drywell.

II. Program for Resolution

1.GE Calculations will be submitted to demonstrate that failure to form the drywell pool will not entail adverse consequences. The calculations will quantify the variation of suppression pool level without formation of the drywell pool and with upper pool dump.

2.GE Interactions between ESF system operation and suppression pool level will be reviewed to assure that higher suppression pool level will not degrade performance.

3.GE A realistic analysis of the effects of failure to recover the drywell air mass will be performed. This analysis will include the effects of containment heat sinks and the mitigating effects of containment spray.

III. Schedule

Items 1-3 will be completed by October 1, 1982.

Action Plan 12 - Generic

I. Issues Addressed

4.3 All Mark III analyses presently assume a perfectly mixed uniform suppression pool. These analyses assume that the temperature of the suction to the RHR heat exchangers is the same as the bulk pool temperature. In actuality, the temperature in the lower part of the pool where the suction is located will be as much as 7-1/2° cooler than the bulk pool temperature. Thus, the heat transfer through the RHR heat exchanger will be less than expected.

II. Program for Resolution

1.GE A study will be completed to identify and quantify the major conservatisms which have been used in the analyses of RHR suppression pool cooling performance.

2.GE An assessment will be provided of the maximum difference which could exist between the bulk suppression pool temperature and the RHR heat exchanger inlet temperature. Based on existing test data this assessment should show that the difference will be below 7-1/2°F. An analysis will be performed to assess the effect of this temperature difference on peak pool temperatures.

3.GE Applicable heat exchanger test data and other test data will be reviewed to provide assurance that the correct heat exchanger capacity has been used.

III. Schedule

Items 1-3 are complete. Results were submitted in a letter from L. F. Dale, MP&L, to H. R. Denton, NRC, reference #AECM-82/353, dated August 19, 1982. These results apply to Perry.

Action Plan 13 - Generic

I. Issues Addressed

4.4 The long term analysis of containment pressure/temperature response assumes that the wetwell airspace is in thermal equilibrium with the suppression pool water at all times. The calculated bulk pool temperature is used to determine the airspace temperature. If pool thermal stratification were considered, the surface temperature, which is in direct contact with the airspace, would be higher. Therefore, the airspace temperature (and pressure) would be higher.

7.1 The containment is assumed to be in thermal equilibrium with a perfectly mixed, uniform temperature suppression pool. As noted under Topic 4, the surface temperature of the pool will be higher than the bulk pool temperature. This may produce higher than expected containment tempera s and pressures.

II. Program for Resolution

1.GE The maximum increase in bulk suppression pool temperature which could occur as a result of temperature stratification will be determined from Action Plan 12. The maximum suppression pool surface temperature will be estimated based on the current understanding of thermal stratification as contained in GESSAR. The effects of this higher surface temperature on containment airspace pressure and temperature will be calculated.

2.GE The conservatism inherent in assuming thermal equilibrium between the containment atmosphere and suppression pool surface will be quantified.

III. Schedule

Items 1 & 2 are complete. Results were submitted in a letter from L. F. Dale, MP&L, to H. R. Denton, NRC, reference #AECM-82/353, dated August 19, 1982. These results apply to Perry.

Action Plan 14 - Generic

I. Issues Addressed

4.5 A number of factors may aggravate suppression pool thermal stratification. The chugging produced through the first row of horizontal vents will not produce any mixing from the suppression pool layers below the vent row. An upper pool dump may contribute to additional suppression pool temperature stratification. The large volume of water from the upper pool further submerges RHR heat exchanger effluent discharge which will decrease mixing of the hotter, upper regions of the pool. Finally, operation of the containment spray eliminates the heat exchanger effluent discharge jet which contributes to mixing.

II. Program for Resolution

1.GE Testing information will be submitted to demonstrate the effectiveness of chugging as a mixing mechanism in the suppression pool.

III. Schedule

This item is complete. Results were submitted in a letter from L. F. Dale, MP&L, to H. R. Denton, NRC, reference #AECM-82/353, dated August 19, 1982. These results apply to Perry.

Action Plan 15 - Plant Specific

I. Issues Addressed

4.6 The initial suppression pool temperature is assumed to be 95°F while the maximum expected service water temperature is 90°F for all GGNS accident analyses as noted in FSAR Table 6.2-50. If the service water temperature is consistently higher than expected, as occurred at Kuosheng, the RHR system may be required to operate nearly continuously in order to maintain suppression pool temperature at or below the maximum permissible value.

II. Program for Resolution

1.GAI This item is not directly applicable to Perry. The initial suppression pool temperature used for the accident analyses is 90°F while the maximum service water temperature is 80°F. This provides a safety factor of 2 over the GGNS values and eliminates the concern for Perry.

2.GAI A discussion of the bases and conservatisms used in defining the 80°F service water peak will be provided.

III. Schedule

Items 1 & 2 will be completed by September 30, 1982.

Action Plan 16 - Plant Specific

I. Issues Addressed

4.7 All analyses completed for the Mark III are generic in nature and do not consider plant specific interactions of the RHR suppression pool suction and discharge.

4.10 Justify that the current arrangement of the discharge and suction points of the pool cooling system maximizes pocl mixing (pp. 150-155 of 5/27/82 transcript).

II. Resolution

1.GAI Specific tests performed by Acres American, Incorporated under contract to Cleveland Electric Illuminating verified that no interactions of the RHR suppression pool suction and discharge occur and provided the design basis for the discharge nozzle arrangement; i.e., a jet angle of 55 degrees. This angle was chosen because of the favorable response time and steady state velocity developed with this arrangement. Another important consideration was the absence of large dead areas when a jet angle of 55 degrees was used.

III. Schedule

Based on the above response, this item is considered closed for Perry with this submittal.

Action Plan 17 - Generic

I. Issues Addressed

4.8 Operation of the RHR system in the containment spray mode will decrease the neat transfer coefficient through the RHR heat exchangers due to decreased system flow. The FSAR analysis assumes a constant heat transfer rate from the suppression pool even with operation of the containment spray.

II. Program for Resolution

1.GE Additional analyses will be completed which incorporate lower RHR heat exchanger heat transfer coefficients during the period when the RHR system is in the containment spray mode. The analyses will be performed both with and without the presence of the bypass leakage capability.

2.GE The analyses performed in Item 1 will be repeated so that the effects of containment heat sinks can be included and quantified. The containment spray will be assumed to be operational only when it is necessary to assure pressure control.

III. Schedule

Items 1 & 2 will be completed by November 1, 1982.

Action Plan 18 - Generic

I. Issues Addressed

4.9 The effect on the long term containment response and the operability of the spray system due to cycling the containment sprays on and off to maximize pool cooling needs to be addressed. Also provide and justify the criteria used by the operator for switching from the containment spray mode to pool cooling mode, and back again.

5.3 Leakage from the drywell to containment will increase the temperature and pressure in the containment. The operators will have to use the containment spray in order to maintain containment temperature and pressure control. Given the decreased effectiveness of the RHR system in accomplishing this objective in the containment spray mode, the bypass leakage may increase the cyclical duty of the containment sprays.

II. Program for Response

1.GE A criteria for transferring the RHR system from containment spray mode to suppression pool cooling mode will be developed.

1a.GE The number of cycles that the containment spray system may undergo will be quantified for a small break accident.

III. Schedule

Items 1 & 2 will be completed by October 1, 1982.

Action Plan 19 - Generic

I. Issues Addressed

5.1 The worst case of drywell to containment bypass leakage has been established as a small break accident. An intermediate break accident will actually produce the most significant drywell to containment leakage prior to initiation of containment sprays.

5.6 The test pressure of 3 psig specified for the periodic operational drywell leakage rate tests does not reflect additional pressurization in the drywell which will result from upper pool dump. This pressure also does not reflect additional drywell pressurization resulting from throttling of the ECCS to maintain vessel level which is required by the current EPGS.

9.2 The continuous steaming produced by throttling the ECCS flow will cause increased direct leakage from the drywell to the containment. This could result in increased containment pressures.

II. Program for Resolution

1.GE A complete spectrum of analyses for varying break sizes will be completed neglecting depressurization of the drywell prior to initiation of containment sprays, but including the effects of containment heat sinks.

2.GE Analyses which will be completed will show that the allowable leakage of A/ K equal to 0.9 is valid for Grand Gulf and the result will be representative for Perry.

3.GE An evaluation of the need for reducing the allowable technical specification limiting conditions for drywell leakage will be provided. Any revised limit would be based upon a pressure of 6 psig in the drywell which would reflect the additional pressure produced by upper pool dump. In the evaluation, credit will be taken for drywell and containment heat sinks.

III. Schedule

Items 1-3 will be completed by November 1, 1982.

Action Plan 20 - Plant Specific

I. Issues Addressed

5.4 Direct leakage from the drywell to the containment may dissipate hydrogen outside the region where the hydrogen recombiners take suction. The anticipated leakage exceeds the capacity of the drywell purge compressors. This could lead to pocketing of hydrogen which exceeds the concentration limit of 4% by volume.

II. Program for Resolution

1.GAI The total allowable leakage will be assumed to be released from the electrical penetrations. The potential for pocketing of hydrogen which is contained in this leakage will be reviewed.

III. Schedule

Item 1 will be completed by November 30, 1982.

Action Plan 21 - Plant Specific

I. Issues Addressed

5.5 Equipment may be exposed to local conditions which exceed the environmental qualification envelope as a result of direct drywell to containment bypass leakage.

II. Program for Resolution

1.GAI A list of essential equipment located near electrical penetrations in the drywell wall will be provided. The list will include a qualitative assessment of the equipment's sensitivity to temperature and the distance of the equipment from the drywell wall.

III. Schedule

Item 1 will be completed by November 30, 1982.

Action Plan 22 - Generic/Plant Specific

I. Issues Addressed

5.8 The possibility of high temperatures in the drywell without reaching the 2 psig high pressure scram level because of bypass leakage through the drywell wall should be addressed.

II. Program for Resolution

1.GE A new analysis will be performed using the capability bypass leakage. This analysis will show that a temperature of 330°F is not reached in the drywell until after ten minutes. In this interval, the operator will have received sufficient information to manually scram the reactor.

2.GAI A detailed list of alarms and parameter displays will be developed which inform the operator of conditions in the drywell. This will include drywell cooling performance, temperature, airflows, leak detection, etc.

III. Schedule

Items 1 & 2 will be completed by November 1, 1982.

Action Plan 23 - Plant Specific

I. Issues Addressed

6.3 The recombiners may produce "hot spots" near the recombiner exhausts which might exceed the environmental qualification envelope or the containment design temperature.

6.5 Discuss the possibility of local temperatures due to recombiner operation being higher than the temperature qualification profiles for equipment in the region around and above the recombiners. State what instructions, if any, are available to the operator to actuate containment sprays to keep this temperature below design values.

II. Program for Resolution

1.GAI Arrangement drawings for the region above the recombiner exhausts will be reviewed. This review will demonstrate that no essential equipment can be affected by the recombiner thermal plume.

III. Schedule

Item 1 will be completed by October 30, 1982.

Action Plan 24 - Generic

I. Issues Addressed

7.2 The computer code used by General Electric to calculate environmental qualification parameters considers heat transfer from the suppression pool surface to the containment atmosphere. This is not in accordance with the existing licensing basis for Mark III environmental qualification. Additionally, the bulk suppression pool temperature was used in the analysis instead of the suppression pool surface temperature.

II. Program for Resolution

1.GE A list and justification of the assumptions used in calculating the environmental qualification parameters for the containment air space will be provided.

III. Schedule

This item is complete. Results were submitted in a letter from L. F. Dale, MP&L, to H. R. Denton, NRC, reference #AECM-82/353, dated August 19, 1982. The Grand Gulf conclusions are applicable to Perry.

Action Plan 25 - Generic/Plant Specific

I. Issues Addressed

8.1 This issue is based on consideration that some technical specifications allow operation at parameter values that differ from the values used in assumptions for FSAR transient analyses. Normally analyses are done assuming a nominal containment pressure equal to ambient (0 psig) a temperature near maximum operating (90°F) and do not limit the drywell pressure equal to the containment pressure. The technical specifications permit operation under conditions such as a positive containment pressure (1.5 psig), temperatures less than maximum (60 or 70°F) and drywell pressure can be negative with respect to the containment (-0.5 psid). All of these differences would result in transient response different than the FSAR descriptions.

II. Program for Resolution

1.GE A detailed summary of all conservatisms which currently exist in the containment response analyses which are part of the FSAR will be provided. Conservatisms in the suppression pool temperature analysis will be identified in Action Plan 12.

2.GE An end point analysis will be completed to demonstrate that with all initial containment parameters at worst case values, the containment design pressure is still not significantly exceeded.

3.GE Perform an analysis with worst case values taking credit for realistic temperature differences between containment and suppression pool and the containment heat sinks.

4.CEI A complete review of the technical specifications for containment conditions versus accident analysis assumptions will be made. A comparison of technical specification values and values used as initial assumptions in the accident analysis will be submitted.

III. Schedule

Items 1-3 will be completed by November 1, 1982.
Item 4 is complete. Results were submitted in a letter from L. F. Dale, MP&L, to H. R. Denton, NRC, reference #AECM-82/353, dated August 19, 1982. The Grand Gulf results are applicable to Perry.

Action Plan 26 - Plant Specific

I. Issues Addressed

8.2 The draft GGNS technical specifications permit operation of the plant with containment pressure ranging between 0 and -2 psig. Initiation of containment spray at a pressure of -2 psig may reduce the containment pressure by an additional 2 psig which could lead to buckling and failures in the containment liner plate.

8.3 If the containment is maintained at -2 psig, the top row of vents could admit blowdown to the suppression pool during an SBA without a LOCA signal being developed.

II. Resolution

1. These issues are not applicable to Perry. Technical specification limitations for containment pressure will be developed based on the results of the analysis from Action Plan 27.

III. Schedule

Based on the above response, this item is complete with this submittal.

Action Plan 27 - Plant Specific

I. Issues Addressed

8.4 Describe all of the possible methods both before and after an accident of creating a condition of low air mass inside the containment. Discuss the effects on the containment design external pressure of actuating the containment sprays.

II. Program for Resolution

1.GAI A complete list of scenarios which might result in reduced containment air mass will be developed.

2.GAI The list of scenarios developed in Item 1 will be reviewed and a worst case, bounding scenario will be selected.

3.GAI An analysis will be completed to establish the containment response under the bounding scenario.

III. Schedule

Items 1-3 will be completed by December 17, 1982.

Action Plan 28 - Plant Specific

I. Issues Addressed

9.3 It appears that some confusion exists as to whether SBA's and stuck open SRV accidents are treated as transients or design basis accidents. Clarify how they are treated and indicate whether the initial conditions were set at nominal or licensing values.

II. Program for Resolution

1.GAI CEI will submit documentation confirming how the small break accident and the stuck open relief valve transient were treated in the design, and the values for the initial conditions.

III. Schedule

Item 1 will be completed by September 17, 1982.

Action Plan 29 - Plant Specific

I. Issues Addressed

10.1 The suppression pool may overflow from the weir wall when the upper pool is dumped into the suppression pool. Alternately, negative pressure between the drywell and the containment which occurs as a result of normal operation or sudden containment pressurization could produce similar overflow. Any cold water spilling into the drywell and striking hot equipment may produce thermal failures.

II. Program for Resolution

1.GAI An evaluation is being performed to determine if drywell flooding can occur following upper pool dump using the most pessimistic initial conditions during normal plant operation.

2.GAI If the analysis indicates weir wall overflow can occur, a revised analysis will be performed based upon changing the vacuum breaker setpoint, or upper pool level or a combination of the above.

III. Schedule

Items 1 & 2 will be completed by November 30, 1982.

Action Plan 30 - Generic

I. Issues Addressed

10.2 Describe the interface requirement (A-42) (sic) that specifies that no flooding of the drywell shall occur. Describe your intended methods to following this interface or justify ignoring this requirement.

II. Program for Resolution

The wording and interpretation of this requirement which was used to assure no flooding of the drywell will be submitted.

III. Schedule

This item is complete. Results were submitted in a letter from L. F. Dale, MP&L, to H. R. Denton, NRC, reference #AECM-82/353, dated August 19, 1982. These results apply to Perry.

Action Plan 31 - Generic/Plant Specific

I. Issues Addressed

11.0 Mark III load definitions are based upon the levels in the suppression pool and the drywell weir annulus being the same. The GGNS technical specifications permit elevation differences between these pools. This may effect load definition for vent clearing.

II. Program for Resolution

1a.GE An evaluation of maximum elevation differences which can exist between the weir annulus and the suppression pool will be made for each owner. If these elevation variations are outside the parameters established for GGNS, a bounding set of parameters will be defined.

2.GAI A discussion will be given of how pressure differences between the wetwell and the drywell will be controlled.

3.GE The changes in hydrodynamic loads which may result from these pressure differences will be evaluated.

III. Schedule

Items 1a-3 will be completed by November 30, 1982.

Action Plan 32 - Generic

I. Issues Addressed

14.0 A failure in the check valve in the LPCI line to the reactor vessel could result in direct leakage from the pressure vessel to the containment atmosphere. This leakage might occur as the LPCI motor operated isolation valve is closing and the motor operated isolation valve in the containment spray line is opening. This could produce unanticipated increases in the containment spray.

II. Program for Resolution

1.GE The potential effect of maximum backflow which can occur will be estimated. This will include calculating the maximum backflow which can occur, evaluating thermal interaction with the relatively cool RHR spray flow and estimates of the limitations on flashing created by flow through the spray nozzles.

III. Schedule

Item 1 will be completed by October 1, 1982.

Action Plan 33 - Plant Specific

I. Issue Addressed

16.0 Some of the suppression pool temperature sensors are located (by GE recommendation) 3" to 12" below the pool surface to provide early warning of high pool temperature. However, if the suppression pool is drawn down below the level of the temperature sensors, the operator could be misled by erroneous readings and required safety action could be delayed.

II. Resolution

1.CEI The emergency operating procedures will require that the operator verify level in the suppression pool before reading suppression pool temperature.

III. Schedule

Based upon the above response, this item is considered closed for Perry with this submittal.

Action Plan 34 - Generic

I. Issues Addressed

19.1 The chugging loads were originally defined on the basis of 7.5 feet of submergence over the drywell to suppression pool vents. Following an upper pool dump, the submergence will actually be 12 feet which may effect chugging loads.

II. Program for Resolution

1.GE The mass flux through the horizontal vents as a function of time during the postulated design basis accident will be established. A table showing submergence versus mass flux will be prepared.

2.GE Test data will be used to demonstrate that chugging loads decrease with lower mass flux and air content.

3.GE The maximum bounding effect of vent submergence on chugging loads will be quantified, and it will be shown that sufficient margin exists in the current load definition to bound any changed vent submergence conditions.

III. Schedule

Items 1 to 4 will be completed by October 1, 1982.

Action Plan 35 - Generic

I. Issues Addressed

19.2 The effect of local encroachments on chugging loads needs to be addressed.

II. Program for Resolution

1.GE An evaluation of the adequacy of available models to investigate the impact of longer acoustic paths on chugging load definition will be performed.

2.GE The inertial impedance effect on chugging loads will be quantified to the maximum extent possible.

III. Schedule

Items 1 & 2 will be completed by October 1, 1982.

Action Plan 36 - Generic

I. Issues Addressed

22.0 The EPG's currently in existence have been prepared with the intent of coping with degraded core accidents. They may contain requirements conflicting with design basis accident conditions. Someone needs to carefully review the EPG's to assure that they do not conflict with the expected course of the design basis accident.

II. Program for Resolution

1. The development program through which the emergency procedure guidelines have passed has adequately addressed this concern. As a result of this issue, the Mark III owners have brought this concern to the attention of the BWR owners group. A generic resolution of this issue will be pursued with the BWR owners group.

III. Schedule

Based on the above response, this item is complete with this submittal.

Action Plan 37 - Plant Specific

I. Issue Addressed

5.7 After upper pool dump, the level of the pool will be 6 feet higher, and drywell-to-containment differential pressure will be greater than 3 psi. The drywell H_2 purge compressor head is nominally 6 psid. The concern is that after an upper pool dump, the purge compressor head may not be sufficient to depress the weir annulus enough to clear the upper vents. In such a case, H_2 mixing would not be achieved.

II. Program for Resolution

1.GAI It will be verified that the discharge pressure of the H_2 purge compressors is sufficient to clear the upper vents following an upper pool dump.

III. Schedule

Item 1 will be completed by November 1, 1982.

Action Plan 38 - Plant Specific

I. Issue Addressed

6.2 General Electric has recommended that an interlock be provided to require containment spray prior to starting the recombiners because of the large quantities of heat input to the containment. Incorrect implementation of this interlock could result in inability to operate the recombiners without containment spray.

II. Resolution

1.GAI The Perry facility does not incorporate such an interlock in the design.

III. Schedule

Based on the above response, this item is considered closed for Perry with this submittal.

Action Plan 39 - Plant Specific

I. Issues Addressed

6.4 For the containment air monitoring system furnished by General Electric, the analyzers are not capable of measuring hydrogen concentration at volumetric steam concentrations above 60%. Effective measurement is precluded by condensation of steam in the equipment.

II. Resolution

1.GAI The hydrogen analyzers provided in the Perry design have been tested for acceptability with 100% steam in the sample and are not supplied by General Electric.

III. Schedule

Based on the above response, this issue is considered closed for Perry with this submittal.

Action Plan 40 - Generic

I. Issue Addressed

7.3 The analysis assumes that the containment airspace is in thermal equilibrium with the suppression pool. In the short-term, this is non-conservative for Mark III due to adiabatic compression effects and finite time required for heat and mass to be transferred between the pool and containment volumes.

II. Resolution

1.GE "The Mark III containment pressure is limited by long-term pool heatup, where the assumption of temperature equilibrium is very conservative. The effect of non-equilibrium on short-term pressures in the containment has been evaluated, and for design basis accident class breaks non-equilibrium effects increase the containment pressure by about 1/2 psi (about 10%) for the interval between 2 and 20 seconds into the transient. These secondary effects are easily overcome by other identified conservatisms in the method. The design is limited by long-term response where the thermal equilibrium assumption is conservative."

III. Schedule

Based on the above response, this item is considered closed for Perry with this submittal. This response was submitted by Grand Gulf in a letter from L. F. Dale, MP&L, to H. R. Denton, NRC, reference #AECM-82/237, dated May 28, 1982, and accepted by the NRC.

Action Plan 41 - Plant Specific

I. Issues Addressed

12. Suppression Pool Makeup LOCA Seal In

The upper pool dumps into the suppression pool automatically following a LOCA signal with a thirty minute delay timer. If the signal which starts the timer disappears on the solid state logic plants, the timer resets to zero preventing upper pool dump.

II. Program for Resolution

1.GAI The criteria for upper pool dump following initiation of a LOCA signal will be clarified.

2.GAI The present Perry relay logic design resets the timer if the LOCA signal is removed. The logic for the suppression pool makeup system will be revised if required per Item 1.

III. Schedule

Items 1-2 will be completed by December 3, 1982.

Action Plan 42 - Plant Specific

I. Issue Addressed

13. Ninety Second Spray Delay

The "B" loop of the containment sprays includes a 90 second timer to prevent simultaneous initiation of the redundant containment sprays. Because of instrument drift in the sensing instrumentation and the timers, GE estimates that there is a 1 in 8 chance that the sprays will actuate simultaneously. Simultaneous actuation could produce negative pressure transients in the containment and aggravate temperature stratification in the suppression pool.

II. Resolution

1.GAI The analyses provided in Section 6.2.1.1.4.2 of the Perry FSAR are based on simultaneous initiation of both spray loops.

III. Schedule

Based on the above response, this item is considered closed for Perry with this submittal.

Action Plan 43 - Plant Specific

I. Issues Addressed

15. Secondary Containment Vacuum Breaker Plenum Response

The STRIDE plants had vacuum breakers between the containment and the secondary containment. With sufficiently high flows through the vacuum breakers to containment, vacuum could be created in the secondary containment.

II. Resolution

1.GAI This item is not applicable to Perry because of the vacuum breaker system design which utilizes ouside air not secondary containment air.

III. Schedule

Based on the above response, this item is considered closed for Perry with this submittal.

Action Plan 44 - Plant Specific

I. Issue Addressed

18. Effects of Insulation Debris

18.1 Failures of reflective insulation in the drywell may lead to blockage of the gratings above the weir annulus. This may increase the pressure required in the drywell to clear the first row of drywell vents and perturb the existing load definitions.

18.2 Insulation debris may be transported through the vents in the drywell wall into the suppression pool. This debris could then cause blockage of the suction strainers.

II. Resolution

1.GAI The insulation used at Perry is a stainless steel clad fiberglass blanket. It is specifically designed to result in minimal loss under DBA conditions and has been tested to remain porous even when piled in several layers. A topical report was filed with the NRC regarding this insulation. The staff has accepted this report, "Nuclear Containment Insulation System", OCF-1, in a letter dated December 8, 1978.

III. Schedule

Based on the above response, this item is considered closed for Perry with this submittal.

Action Plan 45 - Generic

I. Issue Addressed

6.1 General Electric had recommended that the drywell purge compressors and the hydrogen recombiners be activated if the reactor vessel water level drops to within one foot of the top of active fuel. This requi-ement was not incorporated in the emergency procedure guidelines.

II. Resolution

1.CEI The Emergency Procedure Guideline will require the operator to initiate operation of the combustible gas control system if the reactor vessel level drops below the top of the active fuel and cannot be restored.

III. Schedule

Based on the above response, this item is considered closed for Perry with this submittal.

Action Plan 46 - Generic

I. Issue Addressed

17. Emergency Procedure Guidelines

The EPGs contain a curve which specifies limitations on suppression pool level and reactor pressure vessel pressure. The curve presently does not adequately account for upper pool dump. At present, the operator would be required to initiate automatic depressurization when the only action required is the opening of one additional SRV.

II. Resolution

This item is considered to be resolved since it is not a safety concern. Vessel depressurization does not adversely effect any assumptions made with respect to containment response. The effect of increased suppression pool water level (up to approximately 5 feet) due to inadvertent dump could be up to 0.1 psi increase in the pool boundary loads and submerged structure loads. This assessment is based upon the use of the SRV load definition methodology contained in Appendix 3B of the Perry FSAR.

The effect of increased suppression pool water level could be up to a 5% increase in the maximum operating pressure in the SRV discharge piping. The pressure stress is not one of the controlling loads for the piping design; valve discharge dynamic loads and structural response loads are the controlling loads. A 5% increase in pressure is, therefore, inconsequential.

III. Schedule

Based on the above response, this item is considered closed for Perry with this submittal. This response was submitted by Grand Gulf in a letter from L. F. Dale, MP&L, to H. R. Denton, NRC, reference #AECM-82/237, dated May 28, 1982, and accepted by the NRC.

Action Plan 47 - Plant Specific

I. Issue Addressed

1.7 GE suggests that at least 1,500 square feet of open area should be maintained in the HCU floor. In order to avoid excessive pressure differentials, at least 1,500 ft^2 of opening should be maintained at each containment elevation.

II. Resolution

1.G The Perry design provides open areas on all floors above the HCU floor greater than the open area at the HCU floor (1,900 ft^2) which assures adequate venting.

III. Schedule

Based on the above response, this item is considered closed for Perry with this submittal.

Action Plan 48 - Generic

I. Issue Addressed

20. Loads on Structures Piping and Equipment in the Drywell During Reflood

During the latter stages of a LOCA, ECCS overflow from the primary system can cause drywell depressurization and vent backflow. The GESSAR defines vent backflow vertical impingement and drag loads, to be applied to drywell structures, piping, and equipment, but no horizontal loading is specified.

II. Resolution

No action is required based on discussion between MP&L and the NRC staff. The basis for this decision is applicable to Perry.

III. Schedule

This item is complete. Results were submitted in a letter from L. F. Dale, MP&L, to H. R. Denton, NRC, reference #AECM-82/353, dated August 19, 1982. These results apply to Perry.

Action Plan 49 - Plant Specific

I. Issues Addressed

21. Containment Makeup Air for Backup Purge

Regulation Guide 1.7 requires a backup purge H_2 removal capability. This backup purge for Mark III is via the drywell purge line which discharges to the shield annulus which in turn is exhausted through the standby gas treatment system (SGTS). The containment air is blown into the drywell via the drywell purge compressor to provide a positive purge. The compressors draw from the containment, however, without hydrogen clean air makeup to the containment, no reduction in containment hydrogen concentration occurs. It is necessary to assure that the shield annulus volume contains a hydrogen lean mixture of air to be admitted to the containment via containment vacuum breakers.

II. Resolution

This issue is not applicable to Perry since outside air is provided to the containment via vacuum breakers. The Containment Vacuum Relief System fluid system diagram is shown in FSAR Figure 6.2-60.

III. Schedule

Based on the above response, this item is considered closed for Perry with this submittal.

Action Plan 50 - Generic

I. Issue Addressed

5.2 Under technical specification limits, bypass leakage corresponding to $A\sqrt{K} = 0.1$ ft.^{2} constitute acceptable operating conditions. Smaller-than-IBA-sized breaks can maintain break flow into the drywell for long time periods, however, because the RPV would be depressurized over a 6 hour period. Given, for example, an SBA with $A\sqrt{K} = 0.1$, projected time period for containment pressure to reach 15 psig is 2 hours. In the latter 4 hours of the depressurization the containment would presumably experience ever-increasing overpressurization.

II. Resolution

The existing containment cooling systems will control containment pressure and temperature during early increases. If the containment pressure reaches 9 psig, the containment sprays automatically initiate. The operator can manually initiate containment sprays if the containment temperature rises faster than the containment pressure. Finally, the operator can initiate rapid reactor depressurization if containment temperatures and pressures continue to rise.

III. Schedule

Based on the above response, this item is considered closed for Perry with this submittal. This response was submitted by Grand Gulf in a letter from L. F. Dale, MP&L, to H. R. Denton, NRC, reference #AECM-82/237, dated May 28, 1982.

268/A/52/kf

ATTACHMENT 2

PERRY NUCLEAR POWER PLANT
HUMPHREY ISSUES - ACTION PLAN SUMMARY

Action Plan No.		Responsible Organization	Humphrey Issue No.	Schedule	Status as of 9/10/82
1.	LOCAL ENCROACHMENTS		1.1, 1.2, 1.4	10/1/82	
1.1		GE			Complete
1.2		GE			Complete
1.3		GE			Complete
1.4		GE			Ongoing/Generic
1.5		GE			Ongoing/Generic
1.6A		GE			Ongoing/Generic
1.6		GE			Ongoing/Generic
2.	SUBMERGED STRUCTURE LOADS		1.3	11/26/82	
2.1		GE			Ongoing/Generic
2.2		GAI			Ongoing/Plant Specific
2.3		GAI			Ongoing/Plant Specific
3.	PIPING IMPACT LOADS		1.5	10/30/82	
3.1.		GAI			Outgoing/Plant Specific
4.	HORIZONTAL LOADING		1.6	11/11/82	
4.1A		GE			Ongoing/Generic
4.1		GE			Ongoing/Generic
4.2		GAI			Ongoing/Plant Specific
5.	SRVDL SLEEVE-LOADINGS		2.1, 2.2, 2.3	12/17/82	
5.1		GE			Ongoing/Generic
5.2		GE			Ongoing/Generic
5.3		GAI			Ongoing/Plant Specific
5.4		GAI			Ongoing/Plant Specific
5.5		GAI			Ongoing/Plant Specific
5.6		GAI			Ongoing/Plant Specific
6.	RHR DISCHARGE LINE LOADS		3.1, 3.3, 3.7	12/17/82	
6.1		GAI			Ongoing/Plant Specific
6.2		GAI			Ongoing/Plant Specific
6.3		GAI			Ongoing/Plant Specific
6.4		GAI			Ongoing/Plant Specific

Action Plan No.		Responsible Organization	Humphrey Issue No.	Schedule	Status as of 9/10/82
6.5		GAI			Ongoing Plant Specific
6.6		GAI			Ongoing Plant Specific
6.7		GAI			Ongoing Plant Specific
7.	RHR SUBMERGENCE		3.2		
7.1		GE			Complete
8.	RHR (SECOND POP)		3.4, 3.5	12/17/82	
8.1		GAI			Ongoing Plant Specific
8.2		GAI			Ongoing Plant Specific
8.3		GAI			Ongoing Plant Specific
8.4		GAI			Ongoing Plant Specific
8.5		GAI			Ongoing Plant Specific
9.	SUPPRESSION POOL TEMP STRAT.		3.6	10/1/82	
9.1		GE			Ongoing Generic
9.1A		GE			Ongoing Generic
9.2		GE			Ongoing Generic
10.	DBA-BULK POOL TEMP		4.1	10/1/82	
10.1		GE			Ongoing Generic
11.	CONTAINMENT ANALYSIS P/T		4.2, 9.1	10/1/82	
11.1		GE			Ongoing Generic
11.2		GE			Ongoing Generic
11.3		GE			Ongoing Generic
12.	SUPPRESSION POOL MIXING		4.3		
12.1		GE			Complete
12.2		GE			Complete
12.3		GE			Complete
13.	CONTAINMENT ANALYSIS METHODS		4.4, 7.1		
13.1		GE			Complete
13.2		GE			Complete
14.	SUPPRESSION POOL STRAT. (CHUGGING)		4.5		
14.1		GE			Complete

Action Plan No.		Responsible Organization	Humphrey Issue No.	Schedule	Status as of 9/10/82
15.	INITIAL SUPPRESSION POOL TEMP.		4.6	9/30/82	
15.1		GAI			Ongoing Plant Specific
15.2		GAI			Ongoing Plant Specific
16.	SUPPRESSION POOL COOLING		4.7, 4.10		
16.1		GAI			Complete
17.	RHR-CONT. SPRAY		4.8	11/1/82	
17.1		GE			Ongoing Generic
17.2		GE			Ongoing Generic
18.	SPRAYS - CYCLICAL DUTY		4.9, 5.3	10/1/82	
18.1		GE			Ongoing Generic
18.1A		GE			Ongoing Generic
19.	DRYWELL BYPASS LEAKAGE		5.1, 5.6, 9.2	11/1/82	
19.1		GE			Ongoing Generic
19.2		GE			Ongoing Generic
19.3		GE			Ongoing Generic
20.	H2 - POCKETING		5.4	11/30/82	
20.1		GAI			Ongoing Plant Specific
21.	EQUIPMENT ENV. COND.		5.5	11/30/82	
21.1		GAI			Ongoing Plant Specific
22.	HIGH TEMP. IN DRYWELL		5.8	11/1/82	
22.1		GE			Ongoing Generic
22.2		GAI			Ongoing Plant Specific
23.	H2 RECOMBINERS		6.3, 6.5	10/30/82	
23.1		GAI			Ongoing Plant Specific
24.	GE CONT. P/T-EQUIP. QUAL.		7.2		
24.1		GE			Complete
25.	TECH. SPECS/ANALYSIS VALUES		8.1	11/1/82	
25.1		GE			Ongoing Generic
25.2		GE			Ongoing Generic
25.3		GE			Complete
25.4		CEI			Complete

Action Plan No.		Responsible Organization	Humphrey Issue No.	Schedule	Status as of 9/10/82
26.	DRYWELL-PRESSURE NORMAL		8.2, 8.3		
26.1		CEI			Complete
27.	CONTAINMENT NEG. PRESSURE		8.4	12/17/82	
27.1		GAI			Ongoing Plant Specific
27.2		GAI			Ongoing Plant Specific
27.3		GAI			Ongoing Plant Specific
28.	SBA & STUCK OPEN SRV's		9.3	9/17/82	
28.1		GAI			Ongoing Plant Specific
29.	WEIR OVERFLOW - U.P. DUMP		10.1	11/30/82	
29.1		GAI			Ongoing Plant Specific
29.2		GAI			Ongoing Plant Specific
30.	INTERFACE REQUIREMENT (A-42)	GAI	10.2		Complete
31.	WEIR/SUPPRESSION POOL ELVEL DIFF.		11.0	11/30/82	
31.1A		GE			Ongoing Generic
31.2		GAI			Ongoing Plant Specific
31.3		GE			Ongoing Generic
32.	LPCI-CONT. SPRAY BACK FLOW		14.0	10/1/82	
32.1		GE			Ongoing Generic
33.	SUPPRESSION POOL TEMP SENSORS		16.0		
33.1		CEI			Complete
34.	CHUGGING LOADS - U.P. DUMP		19.1	10/1/82	
34.1		GE			Ongoing Generic
34.2		GE			Ongoing Generic
34.3		GE			Ongoing Generic
35.	ENCROACHMENTS-CHUGGING LOADS		19.2	10/1/82	
35.1		GE			Ongoing Generic
35.2		GE			Ongoing Generic
36.	EPG'S		22.0		
36.1		CEI			Complete

Action Plan No.		Responsible Organization	Humphrey Issue No.	Schedule	Status as of 9/10/82
37.	H2 COMPRESSORS		5.7	11/1/82	
37.1		GAI			Ongoing Plant Specific
38.	CONTAINMENT SPRAY/RECOMBINERS INTERLOCK		6.2		
38.1		GAI			Complete
39.	CONTAINMENT AIR MONITORING SYS.		6.4		
37.1		GAI			Complete
40.	CONTAINMENT ANALYSIS EQUIL.		7.3		
40.1		GAI			Complete
41.	SUPPRESSION POOL MAKEUP-LOCA SEAL IN		12.0	12/3/82	
41.1		GAI			Ongoing Generic
41.2		GAI			Ongoing Plant Specific
42.	90 SECOND SPRAY DELAY		13.0		
42.1		GAI			Complete
43.	VACUUM BREAKER - CONT.		15.0		
43.1		GAI			Complete
44.	INSULATION DEBRIS		18.0, 18.1, 18.2		
44.1		GAI			Complete
44.2		GAI			Complete
45.	PURGE COMP. - H2 RECOMBINERS TECH SPEC		6.1		
45.1		CEI			Complete
46.	EPG		17.0		
46.1		CEI			Complete
47.	HCU OPEN AREA		1.7		
47.1		GAI			Complete
48.	WEIR SWELL		20.0		
48.1		GAI			Complete
49.	CONT. MAKEUP AIR FOR BACKUP PURGE		21.0		
49.1		GAI			Complete

Action Plan No.		Responsible Organization	Humphrey Issue No.	Schedule	Status as of 9/10/82
50.	DRYWELL BYPASS LEAKAGE - SBA		5.2		
50.1		GE			Complete

KEY: GE - GENERAL ELECTRIC
CEI - CLEVELAND ELECTRIC ILLUMINATING
GAI - GILBERT ASSOCIATES, INC.